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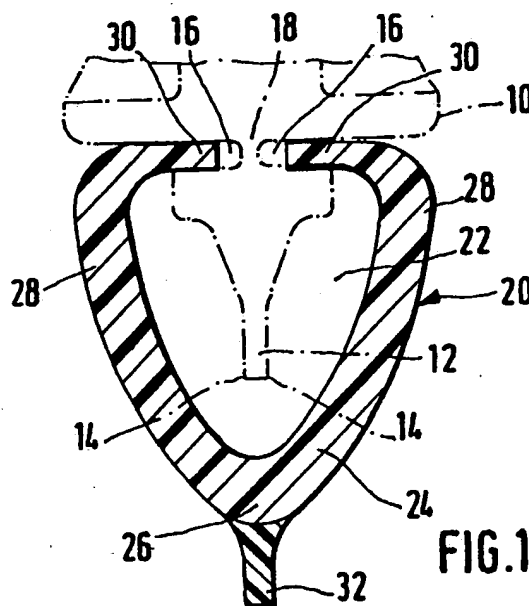
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(54) Protective device for a wiper blade

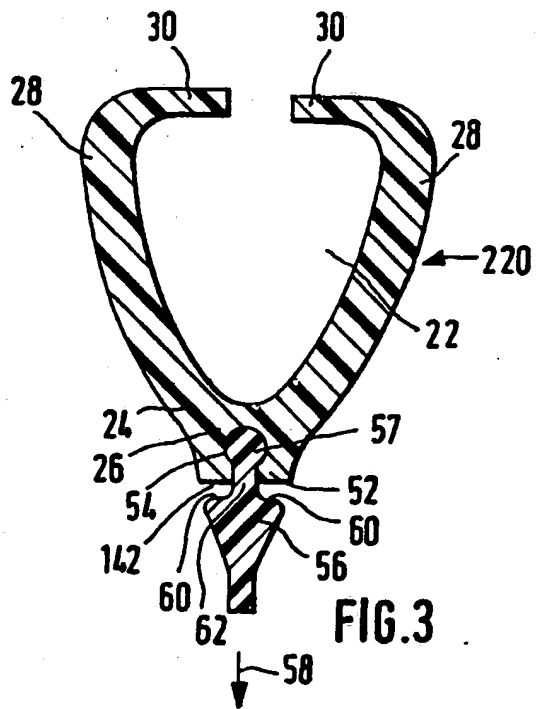
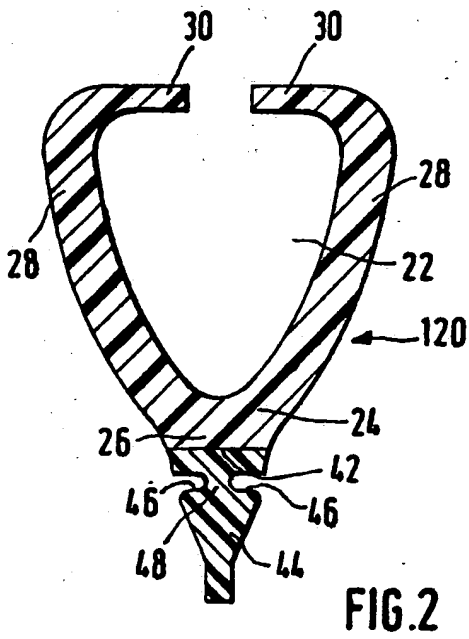
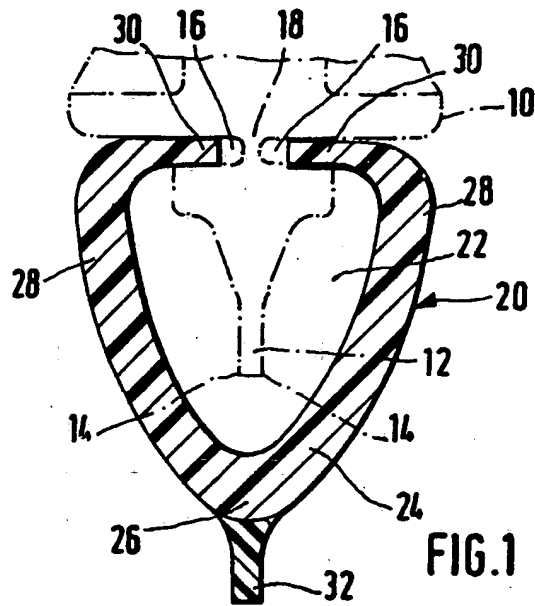
(57) A protective device 20 for a windscreen wiper blade comprises a split sleeve 22 provided with a wiper lip 32. The device may be clipped onto

wiper rubber 10. The object of providing the protective device with a lip is to enable it to be used for cleaning the windscreen during marshalling operations instead of the wiper blade thereby preventing wear of the latter.

*no end cap*



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# SPECIFICATION

A wiper blade with an elongate wiper element held in a frame

This invention relates to a protective device for a windscreen wiper blade and to a windscreen wiper blade provided with such a protective device.

A wiper blade is already known the wiper element of which and moreover the sensitive wiper lip in particular is covered by a protective section when the new vehicle is preserved before it leaves the works. The protective section is only removed when the new vehicle is handed over to the purchaser after the final preservation. In so doing, it is ensured that the wiper element is in a perfect condition when the vehicle is handed over. However, there is the disadvantage that during loading and during the shutting down of the new vehicle in the store the windscreen which is non-transparent due to dust and possibly due to rain cannot be cleaned by the wiper system of the vehicle because the relatively stiff protective section only partially engages the curved screen and is not designed to clean the screen.

The protective device in accordance with the invention is provided with a wiper lip. This has the advantage that the wiper lip can be used during the marshalling operations so that the screen wiper system of the vehicle can be used without the real wiper blade lip becoming worn.

Preferably, the protective device comprises a tubular section and a flexible strip forming the wiper lip connected by means of one of its longitudinal edges to the outside of the tubular section.

## Drawing

Embodiments of the invention are illustrated in the drawing and are described in detail in the following description. Figure 1 is a cross-section through a protective section in accordance with the invention with a partial section through the wiper element shown in dotted lines, Figure 2 is a cross-section through another arrangement of protective section and Figure 3 is a cross-section through a further form of protective section.

## Description of the Embodiments

In Figure 1, a wiper element or wiper rubber 10 is shown in dotted lines and which forms part of a wiper blade (not shown) which is part of a wiper system for motor vehicle screens. The wiper blade 10 has a wiper lip 12 which is provided with the two wiping edges 14 which are for the perfect cleaning of the windscreen. On one of its opposite long sides, the wiper element 10 has longitudinal grooves 16 and the tilting web 18 remaining between the opposite longitudinal grooves 16 is provided for a correct application of the wiper lip 12 during operation of the system.

The wiper lip 12 is enclosed by a tubular or sleeve-like elongate protective section 20. The form of the protective section 20 is so designed that the sleeve bore 22 is suitable for

accommodating the wiper lip 12 of the wiper element 10. Moreover, the body 24 of the protective section is made substantially V-shaped wherein two limbs 28 diverge from a base 26 of the body 24 of the protective section. At their free ends, each limb 28 has a claw-like extension 30, directed towards one another, and the ends of the claws 30 are located at a distance from one another. A flexible strip 32 one longitudinal edge of which is rigidly connected to the body 24 of the section, is arranged on the outside of the base 26 of the body 24 of the section remote from the claws 30. In the arrangement according to Figure 1, the strip 32 is moulded onto the protective section 20 preferably extruded during the extrusion of the protective section 20. By this method, a perfect connection between the protective section 20 and the strip 32 is achieved without any special operation.

As Figure 1 shows, the protective section 20 is so mounted on the wiper element 10 that the claws 30 engage in the longitudinal grooves 16. In this position, the wiper lip 12 remains completely free within the sleeve bore 22 so that a perfect protection for the wiper lip 12 is guaranteed.

In the arrangement of the protective section according to Figure 2, this has substantially the same cross-section as the protective section according to Figure 1. Moreover, the parts of the protective section which correspond to the protective section according to Figure 1 are also provided with the same references. However, as a modification of the embodiment according to Figure 1, in the protective section according to Figure 2 the outer surface 42 of the base 26 is made flat. A separately produced pre-shaped wiper lip 44 is stuck to the outer surface 42.

The embodiment according to Figure 3 also corresponds substantially to the arrangement according to Figure 1, on account of which the parts of the protective section 220 in Figure 3 are provided with the same references as in the arrangement according to Figure 1 and which correspond to the corresponding parts of that arrangement. As a modification of the arrangement according to Figure 1, the base 26 of the protective section 220 is provided with an extension 52 so that the wall of the protective section 220 is thicker in the region of the base 26 than in the embodiments according to Figures 1 and 2. However, the extension 52 likewise terminates in a flat outer surface 142 in which is arranged a dove-tail groove 54. This dove-tail groove 54 extends over the entire length of the protective section 20. A pre-formed strip 56 one edge 57 of which is matched to the cross-section of the groove 54, is inserted in the groove 54. In this manner, the strip 56 is held more securely in the groove and cannot be pulled out of the groove 54 in the direction of the arrow 58.

The strips 32, 44, 56 are made of a soft PVC whilst the protective sections 20, 120, 220 are made from a hard PVC. Thus it is possible for the somewhat flexible auxiliary wiper lips formed by the strip 32, 44, 56 to be in the position to fit the

curve of the windscreen within predetermined limits and thus be possible to clean the windscreen without the wiper lip 14 of the wiper element 10 or the sensitive wiping edges 14 of the wiper lip 12 being used and becoming worn. In order to achieve a better cleaning effect, it can be of advantage if the strip 44 or 56 can engage the member 120 or 220 of the section by means of shoulders 46 or 60 when the strip 44 or 46 is tilted during operation within the range of a normal tilting web 48 or 62 on a windscreen wiper blade.

As a modification of the illustrated embodiments, it is also possible for a tubular protective section to enclose a larger region of the wiper blade; thus, for example, also parts of the frame. It is a feature of the invention that a flexible strip one longitudinal edge of which is connected to the protective section is arranged on the side of the protective section facing the screen.

#### CLAIMS

1. A protective device for a windscreen wiper blade, provided with a wiper lip.
2. A protective device according to claim 1, comprising a tubular section and a flexible strip forming the wiper lip connected by means of one of its longitudinal edges to the outside of the tubular section.
3. A protective device according to claim 2, in which the tubular section is provided with a longitudinal slot bounded by claws for engagement with a windscreen wiper blade, the flexible strip being connected to that part of the tubular section remote from the claws.
4. A protective device according to claim 2 or claim 3, in which the flexible strip is more flexible than the tubular section.
5. A protective device according to any one of claims 2 to 4, in which the flexible strip is moulded with the tubular section.
6. A protective device according to any one of claims 2 to 4, in which the flexible strip is extruded

with the tubular section.

7. A protective device according to any one of claims 2 to 4, in which the flexible strip is preformed and is stuck to the tubular section.

8. A protective device according to any one of claims 2 to 4, in which the flexible strip is inserted in a longitudinal groove in the tubular section.

9. A protective device according to claim 8, in which the entrance to the groove is narrower than the groove itself and the flexible strip is shaped to fit the entrance and the groove.

10. A protective device according to any one of claims 2 to 9, in which the flexible strip is provided with a web of reduced cross-section arranged between the wiper lip and the tubular section.

11. A protective device according to claim 10, in which the wiper lip is provided with shoulders limiting the extent of tilting movement of the wiper lip with respect to the tubular section permitted by the web.

12. A protective device according to any preceding claim, in which the wiper lip is of soft PVC.

13. A protective device according to any one of claims 2 to 11, in which the flexible strip is of a soft PVC and the tubular section is of a hard PVC.

14. A protective device for a windscreen wiper blade substantially as herein described with reference to Figure 1, Figure 2 or Figure 3 of the accompanying drawings.

15. A windscreen wiper blade provided with a protective device according to any preceding claim.

16. A windscreen wiper blade according to claim 15, in which the wiper blade is provided with longitudinal grooves and the protective device is attached to the wiper blade by means of the grooves so as to provide protection for the wiper blade lip.

17. A windscreen wiper blade according to claim 14, in which the wiper blade is mounted in a frame and the longitudinal grooves are arranged on the side of the blade remote from the frame.